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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,573

09/29/2004

Shengqian Xiao

XIAO1

9615

1444

7590

08/10/2005

BROWDY AND NEIMARK, P.L.L.C.

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WASHINGTON, DC 20001-5303

EXAMINER

FETZNER, TIFFANY A

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/509,573

Applicant(s)

XIAO ET AL.

Examiner

Tiffany A. Fetzner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/29/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 09/29/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Drawings

3. The drawings are objected to because **components 1-6 require appropriate labels**; additionally there are stray toner lines on the drawings submitted September 29th 2004.

- A) In **figure 1** component 1 should be labeled "yoke" as taught on page 4 line 3 of the original specification.
- B) In **figure 1** component 2 should be labeled "magnetic material" as taught on page 4 line 4 of the original specification.
- C) In **figure 1** component 3 should be labeled "pole heads" as taught on page 4 line 4 of the original specification.
- D) In **figure 1** component 4 should be labeled "plates for eliminating vortex (i.e. eddy currents)" as taught on page 4 line 4 of the original specification.
- E) In **figure 1** component 5 should be labeled **either** "shim rings" **or** "homogenizing rings" **or** "uniform maintaining magnetic field rings" as taught on page 4 lines 4-5 of the original specification.
- F) In **figure 1** component 6 should be labeled "gradient coils" as taught on page 4 line 5 of the original specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be

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removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following grammatical and typographical (i.e. spelling, or mistranslated) informalities:
- A) On **page 2** line 2, **delete** "necessary" and **insert** "required".
 - B) On **page 2** line 3, after "can" **delete** "seat" and **insert** "be seated".
 - C) On **page 2** line 3, after "table so" **delete** "as to" and **insert** "that they may".
 - D) On **page 2** line 5, after "type magnet" **delete** "is" and **insert** "has".
 - E) On **page 2** line 6, after "available" **delete** "in" and **insert** "on".
 - F) On **page 2** line 7, after "share thereof" **delete** "is" and **insert** "has".
 - G) On **page 2** line 8, **delete** "has" and **insert** "have".
 - H) On **page 2** line 21, after "eliminating vortex" which is a confusing / mistranslated way of describing 'the removal of residual magnetization of induced eddy current effects' and **insert** "(i.e. eddy currents)".
 - I) On **page 2** line 23, **delete** "uniformising" which is not a word in English and **insert either** "homogenizing the" **or** "increasing the uniformity of the" **or** "shimming the".
 - J) On **page 2** line 28, **delete** "uniformising" which is not a word in English and **insert either** "homogenizing the" **or** "increasing the uniformity of the" **or** "shimming the".
 - K) On **page 3** line 2, **delete** "in structure" which does not make sense and **insert either** "one structure", or "a one piece structure", or "a single unitary structure", or "a single structure".

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- L) On **page 3** line 7, after “eliminating substantially vortex effect” which is a confusing / mistranslated way of describing ‘the removal of residual magnetization of induced eddy current effects’ and **insert** “(i.e. eddy currents).”.
- M) On **page 3** line 9, after “consistent” **delete** “by” and **insert** “as a result of”.
- N) On **page 3** line 15, after “is designed as” **insert** “a”.
- O) On **page 3** line 20, after “vortex” **insert** “(i.e. eddy current)”.
- P) On **page 3** line 21, **delete** “uniformised” which is not a word in English and **insert either** “homogenized”; or “shimmed” **Or delete** “can be uniformised easily” and **Insert** “has an easily increased uniformity.”.
- Q) On **page 3** line 29, after “vortex” **insert** “(i.e. eddy current)”.
- R) On **page 3** line 29, **delete** “uniformising” which is not a word in English and **insert either** “homogenizing ” or “increasing the uniformity of the” or “shimming the”.
- S) On **page 4** line 4, after “vortex” **insert** “(i.e. eddy currents)”.
- T) On **page 4** line 5, **delete** “uniformising” which is not a word in English and **insert either** “homogenizing the” or “increasing the uniformity of the” or “shimming the”.
- U) On **page 4** line 10, **delete** “uniformising” which is not a word in English and **insert either** “homogenizing the” or “increasing the uniformity of the” or “shimming the”.
- V) On the **abstract** page line 6, after “vortex” **insert** “(i.e. eddy currents)”.
- W) On the **abstract** page line 6, **delete** “uniformising” which is not a word in English and **insert either** “homogenizing the” or “increasing the uniformity of the” or “shimming the”.
- X) On the **abstract** page line 8, **delete** “open type” and **insert** “an open type configuration”.
- Y) On the **abstract** page line 10, **delete** “fluent” and **insert either** “continuous” or “consistent uninterrupted”. Appropriate correction is required.

Claim Objections

5. **New Claims 8-9** are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must be written in alternative only format, and to state that a claim is dependent “**on any one of the claim**” is grammatically awkward. The examiner suggests that applicant amend **New claim 8** to state “The permanent

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magnet for magnetic resonance **according to claim 6**, and that applicant amend **New claim 9** to state "The permanent magnet for magnetic resonance **according to claim 7**, to put the claim in grammatically correct dependent claim format. See MPEP § 608.01(n). Accordingly, the **New claims 8** and **9** are being treated as if they depend respectively from **claims 6** and **7** as listed above, in order to conduct an examination based on the merits of these claims. not been further treated on the merits. Appropriate correction is required.

6. **New claim 6** is objected to for the same typographical, grammatical, or mistranslated errors as noted in the objections to the specification above.

A) In **new claim 6** line 6, after "vortex" insert "(i.e. eddy currents);".

B) In **new claim 6** line 7, after **delete** "uniformising" which is not a word in English and **insert either** "homogenizing the" " **or** "increasing the uniformity of the" **or** "shimming the". Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **New Claims 6-9** are rejected under both **35 U.S.C. 103(a)** and **35 U.S.C. 102(a)** as being obvious over **Cheng et al.**, international publication **WO 01/53847 A1** published July 26th 2001, with an effective US priority prior art date of January 19th 2000.

11. **New Claims 6-9** are also rejected under **35 U.S.C. 103(a)** as being obvious over **Cheng et al.**, international publication **WO 01/53847 A1** published July 26th 2001, with an effective US priority prior art date of January 19th 2000; in further view of **Sellers** US patent 5,431,165 issued July 11th 1995.

12. With respect to **New Claim 6**, **Cheng et al.**, **WO 01/53847** teaches shows and suggests "A permanent magnet for magnetic resonance", [See **Cheng et al.**, **WO 01/53847** page 1 lines 8-9] "comprising: a yoke;" [See **Cheng et al.**, **WO 01/53847** page 4 line 18 through page 11 line 2] which describes the yoke component 1 of figures 1-4 in detail.] "magnetic material;" [See the NdFeB or Neodymium-Iron-Boron of **Cheng et al.**, **WO 01/53847** page 2 line 22 through page 9 line 13], "pole heads;" [See **Cheng et al.**, **WO 01/53847** component 2 of figures 1 through 4; page 2 line 22 through page 9 line 13], "plates for eliminating vortex" (i.e. eddy currents) [See **Cheng et al.**, **WO 01/53847** the components identified as "4" of figures 1 through 4; page 6 line 14 through page 7 line 27; page 10 line 12 through page 11 line 2; and "rings for uniformising" (i.e. homogenizing the) magnetic field" ; [See **Cheng et al.**, **WO 01/53847** the components identified as "5" of figures 1 through 4; page 6 line 16 through page 11 line 2].

13. The presence of "gradient coils, is also taught by **Cheng et al.**, **WO 01/53847** [See **Cheng et al.**, **WO 01/53847** figures 1 through 4 where the gradient coil system is

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taught as an intrinsic part of the system as per page 2 lines 1-4 where the conventional MRI system is taught to include a main magnet, a gradient system, RF coils, and at least a transmitter, a receiver, and a computer equipped with imaging software. The examiner notes that while these components are not indicated with component numbers in figures 1-4 they are a taught part of the **Cheng et al., WO 01/53847 reference.**]

14. Alternatively **Sellers** show the presence of gradient coils in a permanent MRI device similar to **Cheng et al.**, [See **Sellers figure 4**, and col. 4 lines 48-56 which is similar to both applicant's figures 1, 2, and **Cheng et al.**, figures 1-4. Figure 4 of **Sellers** may be a permanent magnet structure as per col. 1 lines 18-21.] In **Sellers** the gradient coils are component 9 in figure 2, or components 3 and 4 of figure 1. See col. 3 lines 41-44; col. 3 lines 61-65] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Cheng et al.**, with the direct identification labeling of the gradient coils, as is done by **Sellers** because gradient coils are a component of a conventional MRI apparatus / device / magnet system and are taught by **Cheng et al.**, even though they are not explicitly identified by **Cheng et al.**, with a component number. /in order to

15. **Cheng et al., WO 01/53847** also teaches and shows that "said yoke of the magnet has an integral, substantially C-shaped and open structure" [See figures 1-4 page 4 line 8 through page 11 line 2] "with two columns" [See the **Cheng et al., WO 01/53847** two rectangular base-feet support columns shown in figures 1, 3, and 4, and page 8 line 27] which "is integrally manufactured by casting", [See **Cheng et al., WO 01/53847** page 8 lines 10-27; and page 4 line 18 through page 5 line 7.]

16. **Cheng et al., WO 01/53847** lacks directly stating that "said yoke is annealed twice." However, **Cheng et al., WO 01/53847** does teach that the yoke is formed of a single piece of cast steel, which results in all the yoke units produced by the single casting having the same (i.e. uniform) quality, because they are made from the same mold. Additionally **Cheng et al., WO 01/53847** teaches that single casting of the yoke improves the structural integrity of the yoke, and permits the yoke arms to remain parallel, (i.e. the orientation of the unitary yoke arm material is able to prevent / withstand the magnetic attraction of the magnet poles, from pulling the yoke arms,

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component 10 of figures 1 and 4, from being pulled together). [See **Cheng et al.**, **WO 01/53847** page 4 line 8 through page 8 line 27 which directly suggests that the "grain orientation" of the yoke is also consistent and uniform, since opposite on non-uniform magnetic directions attract, and like magnetic forces repel one another. Therefore, It would have been obvious to one of ordinary skill in the art at the time that the invention was made that since the yoke arms of **Cheng et al.**, **WO 01/53847** remain parallel to one another, that the magnetic grain of the material forming the yoke of **Cheng et al.**, **WO 01/53847** and the single cast yoke forming material itself are uniform. Additionally, because a uniform material, with a uniform grain orientation is producible by "annealing a formation material twice" It would have been obvious to one of ordinary skill in the art at the time that the invention was made that the single / integral one-piece permanent magnetic yoke structure of **Cheng et al.**, **WO 01/53847** includes the feature of "twice annealing" intrinsically.

17. With respect to **New Claim 7**, **Cheng et al.**, **WO 01/53847** teaches and suggests that "said yoke is formed of low carbon steel material having good magnetic conductivity." [See **Cheng et al.**, **WO 01/53847** page 4 line 8 through page 5 line 7; and page 2 line 22 through page 4 line 7.] The same reasons for rejection, obviousness, and motivation to combine, that apply to **New claim 6**, also apply to **new claim 7** and need not be reiterated.

18. With respect to corresponding **New Claims 8 and 9** which respectively depend from **New claims 6 and 7** above, **Cheng et al.**, lacks directly teaching that "said yoke is designed so as to have a streamline-shape appearance". but **Cheng et al.**, does suggest from the curved angles of the figures, and the teachings of page 7 line 9 through page 9 line 13], which design the body of the yoke to be as functional and as efficient as possible while reducing the weight of the magnet as much as possible, a teaching indicative of considerations for "a streamline-shape appearance".

19. Alternatively, **Sellers** shows a permanent magnet assembly similar to **Cheng et al.**, [See **Sellers** figure 4, which is also suggestively streamlined by design. [See **Sellers** figure 4 col. 4 lines 48-56 and col. 2 line 57 through col. 4 line 10; and col. 1 line 4 through col. 2 line 68]].

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20. Additionally, the ability to modify the “look” of the **Cheng et al.**, reference with a “streamlined appearance” would have been obvious to one of ordinary skill in the art at the time that the invention was made because conventionally, when it comes to selling a product, statistically, devices with “streamlined appearances” are generally more aesthetically pleasing to individuals, since the devices appear to be “highly crafted”, “more modern” or “high tech” which tends to promote a concept of “being on the cutting edge of the technology”, which is highly desirable to individuals or companies who may be paying a significantly large amount of money in order to acquire a new permanent magnet MRI system; (i.e. streamlining a product often increases its value). Similarly “box-like shapes” are conventionally and statistically perceived as less aesthetically pleasing to individuals, because the devices appear to be: “pieced together”, “rough”, “old school technology”, “less modern” and/or “basic / general models”, which may detrimentally suggest that the product itself is less valuable, which is highly undesirable, for anyone buying a new permanent magnet MRI system. Therefore “streamlining” the yoke’s “appearance”, is not a novel, or non-obvious claim limitation, because it is suggested from the cited prior art figures, teachings, and the already established known basic principles of selling a product in the current global economy. Streamlining the appearance of the yoke therefore does not define the applicant’s invention over the applied prior art(s) by itself. The same reasons for rejection, that apply to **New claims 6 and 7**, also apply to **new claims 8, 9** and need not be reiterated.

21. **New Claims 6-9** are rejected under **35 U.S.C. 103(a)** as being obvious over **Cheng et al.**, US patent application publication **2003/0001575** A1 published January 2nd 2003, with an effective US priority prior art date of January 19th 2000.

22. **New Claims 6-9** are also rejected under **35 U.S.C. 103(a)** as being obvious over **Cheng et al.**, US patent application publication **2003/0001575** A1 published January 2nd 2003, with an effective US priority prior art date of January 19th 2000; in further view of **Sellers** US patent 5,431,165 issued July 11th 1995.

23. With respect to **New Claim 6, Cheng et al.**, US patent application publication **2003/0001575** teaches, shows and suggests "A permanent magnet for magnetic resonance", [See **Cheng et al.**, **2003/0001575** page 1 paragraph 1] "comprising: a yoke;" [See **Cheng et al.**, **2003/0001575** page 1 paragraph [0016] through page 3 paragraph [0041] which describes the yoke component 1 of figures 1-4 in detail.] "magnetic material;" [See the NdFeB or Neodymium-Iron-Boron of **Cheng et al.**, **2003/0001575** paragraphs [0009], [0012], [0014], [0016], [0027], [0031], [0032], and [0035]. "pole heads;" [See **Cheng et al.**, **2003/0001575** component 2 of figures 1 through 4; paragraphs [0016], [0027] [0028], 0031], [0033], [0034] and [0035]] "plates for eliminating vortex" (i.e. eddy currents) [See **Cheng et al.**, **2003/0001575** the components identified as "4" of figures 1 through 4; paragraphs [0027] through [0032] and paragraphs [0036] through [0040]]; and "rings for uniformising" (i.e. homogenizing the) magnetic field" ; [See **Cheng et al.**, **2003/0001575** the components identified as "5" of figures 1 through 4; in paragraphs [0027] through [0040],

24. The presence of "gradient coils, is also taught by **Cheng et al.**, **2003/0001575**" [See **Cheng et al.**, **2003/0001575** figures 1 through 4 where the gradient coil system is taught as an intrinsic part of the system as per paragraph [0004] where the conventional MRI system is taught to include a main magnet, a gradient system, RF coils, and at least a transmitter, a receiver, and a computer equipped with imaging software. The examiner notes that while these components are not indicated with component numbers in figures 1-4 they are a taught part of the **Cheng et al.**, **2003/0001575 reference.**]

25. Alternatively **Sellers** show the presence of gradient coils in a permanent MRI device similar to **Cheng et al.**, [See **Sellers figure 4**, and col. 4 lines 48-56 which is similar to both applicant's figures 1, 2, and **Cheng et al.**, figures 1-4. Figure 4 of **Sellers** may be a permanent magnet structure as per col. 1 lines 18-21.] In **Sellers** the gradient coils are component 9 in figure 2, or components 3 and 4 of figure 1. See col. 3 lines 41-44; col. 3 lines 61-65] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Cheng et al.**, with the direct identification labeling of the gradient coils, as is done by **Sellers** because gradient coils are a component of a conventional MRI apparatus / device / magnet system and

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are taught by **Cheng et al.**, even though they are not explicitly identified by **Cheng et al.**, with a component number. /in order to

26. **Cheng et al., 2003/0001575** also teaches and shows that “said yoke of the magnet has an integral, substantially C-shaped and open structure” [See figures 1-4 paragraphs [0014] through [0040] “with two columns” [See the **Cheng et al., 2003/0001575** two rectangular base-feet support columns shown in figures 1, 3, and 4, and the last sentence of paragraph [0034] which “is integrally manufactured by casting”, [See **Cheng et al., 2003/0001575** paragraphs [0034] and [0016]]

27. **Cheng et al., 2003/0001575** lacks directly stating that “said yoke is annealed twice.” However, **Cheng et al., 2003/0001575** does teach that the yoke is formed of a single piece of cast steel, which results in all the yoke units produced by the single casting having the same (i.e. uniform) quality, because they are made from the same mold. Additionally **Cheng et al., 2003/0001575** teaches that single casting of the yoke improves the structural integrity of the yoke, and permits the yoke arms to remain parallel, (i.e. the orientation of the unitary yoke arm material is able to prevent / withstand the magnetic attraction of the magnet poles, from pulling the yoke arms, component 10 of figures 1 and 4, from being pulled together). [See **Cheng et al., 2003/0001575** paragraphs [0014], [0015], [0016], [0033], [0034], and [0035]] which directly suggests that the “grain orientation” of the yoke is also consistent and uniform, since opposite on non-uniform magnetic directions attract, and like magnetic forces repel one another. Therefore, It would have been obvious to one of ordinary skill in the art at the time that the invention was made that since the yoke arms of **Cheng et al., 2003/0001575** remain parallel to one another, that the magnetic grain of the material forming the yoke of **Cheng et al., 2003/0001575** and the single cast yoke forming material itself are uniform. Additionally, because a uniform material, with a uniform grain orientation is producible by “annealing a formation material twice” It would have been obvious to one of ordinary skill in the art at the time that the invention was made that the single / integral one-piece permanent magnetic yoke structure of **Cheng et al., 2003/0001575** includes the feature of “twice annealing” intrinsically.

28. With respect to **New Claim 7, Cheng et al., 2003/0001575** teaches and suggests that "said yoke is formed of low carbon steel material having good magnetic conductivity." [See **Cheng et al., 2003/0001575** paragraphs [0014] through [0016] and paragraphs [0009] through [0013]] The same reasons for rejection, obviousness, and motivation to combine, that apply to **New claim 6**, also apply to **new claim 7** and need not be reiterated.

29. With respect to corresponding **New Claims 8 and 9** which respectively depend from **New claims 6 and 7** above, **Cheng et al.**, lacks directly teaching that "said yoke is designed so as to have a streamline-shape appearance". but **Cheng et al.**, does suggest from the curved angles of the figures, and the teachings of paragraphs [0033] through [0035], which design the body of the yoke to be as functional and as efficient as possible while reducing the weight of the magnet as much as possible, a teaching indicative of considerations for "a streamline-shape appearance".

30. Alternatively, **Sellers** shows a permanent magnet assembly similar to **Cheng et al.**, [See **Sellers** figure 4, which is also suggestively streamlined by design. [See **Sellers** figure 4 col. 4 lines 48-56 and col. 2 line 57 through col. 4 line 10; and col. 1 line 4 through col. 2 line 68]].

31. Additionally, the ability to modify the "look" of the **Cheng et al.**, reference with a "streamlined appearance" would have been obvious to one of ordinary skill in the art at the time that the invention was made because conventionally, when it comes to selling a product, statistically, devices with "streamlined appearances" are generally more aesthetically pleasing to individuals, since the devices appear to be "highly crafted", "more modern" or "high tech" which tends to promote a concept of "being on the cutting edge of the technology", which is highly desirable to individuals or companies who may be paying a significantly large amount of money in order to acquire a new permanent magnet MRI system; (i.e. streamlining a product often increases its value). Similarly "box-like shapes" are conventionally and statistically perceived as less aesthetically pleasing to individuals, because the devices appear to be: "pieced together", "rough", "old school technology", "less modern" and/or "basic / general models", which may detrimentally suggest that the product itself is less valuable, which is highly undesirable,

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for anyone buying a new permanent magnet MRI system. Therefore “streamlining” the yoke’s “appearance”, is not a novel, or non-obvious claim limitation, because it is suggested from the cited prior art figures, teachings, and the already established known basic principles of selling a product in the current global economy. Streamlining the appearance of the yoke therefore does not define the applicant’s invention over the applied prior art(s) by itself. The same reasons for rejection, that apply to **New claims 6 and 7**, also apply to **new claims 8, 9** and need not be reiterated.

32. **New Claims 6-9** are rejected under **35 U.S.C. 103(a)** as being obvious over **Cheng et al.**, US patent **6,842,002 A1** issued January 11th 2005, with an effective US priority prior art date of January 19th 2000.

33. **New Claims 6-9** are also rejected under **35 U.S.C. 103(a)** as being obvious over **Cheng et al.**, US patent **6,842,002 A1** issued January 11th 2005, with an effective US priority prior art date of January 19th 2000; in further view of **Sellers** US patent 5,431,165 issued July 11th 1995.

34. With respect to **New Claim 6**, **6,842,002** teaches and suggests “A permanent magnet for magnetic resonance”, [See **Cheng et al.**, **6,842,002** col.1 lines 4-6] “comprising: a yoke,” [See **Cheng et al.**, **6,842,002** col. 2 line58 through col. 6 line 12] which describes the yoke component 1 of figures 1-4 in detail.] “magnetic material,” [See the NdFeB or Neodymium-Iron-Boron of **Cheng et al.**, **6,842,002** col. 2 line 48 through col. 5 line 24], “pole heads,” [See **Cheng et al.**, **6,842,002** component 2 of figures 1 through 4; col. 2 line 48 through col. 5 line 24], “plates for eliminating vortex” (i.e. eddy currents) [See **Cheng et al.**, **6,842,002** the components identified as “4” of figures 1 through 4; col. 2 line 58 through col. 3 line 25; col. 5 line 25 through page 6 line 12; and “rings for uniformising” (i.e. homogenizing the) magnetic field” ; [See **Cheng et al.**, **6,842,002** the components identified as “5” of figures 1 through 4; col. 3 line 55 through col. 6 line 12].

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35. The presence of "gradient coils, is also taught by **Cheng et al., 6,842,002** [See **Cheng et al., 6,842,002** figures 1 through 4 where the gradient coil system is taught as an intrinsic part of the system as per col. 1 lines 36-40 where the conventional MRI system is taught to include a main magnet, a gradient system, RF coils, and at least a transmitter, a receiver, and a computer equipped with imaging software. The examiner notes that while these components are not indicated with component numbers in figures 1-4 they are a taught part of the **Cheng et al., 6,842,002 reference.**]

36. Alternatively **Sellers** show the presence of gradient coils in a permanent MRI device similar to **Cheng et al.**, [See **Sellers figure 4**, and col. 4 lines 48-56 which is similar to both applicant's figures 1, 2, and **Cheng et al.**, figures 1-4. Figure 4 of **Sellers** may be a permanent magnet structure as per col. 1 lines 18-21.] In **Sellers** the gradient coils are component 9 in figure 2, or components 3 and 4 of figure 1. See **Sellers** col. 3 lines 41-44; col. 3 lines 61-65] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Cheng et al.**, with the direct identification labeling of the gradient coils, as is done by **Sellers** because gradient coils are a component of a conventional MRI apparatus / device / magnet system and are taught by **Cheng et al.**, even though they are not explicitly identified by **Cheng et al.**, with a component number. /in order to

37. **Cheng et al., 6,842,002** also teaches and shows that "said yoke of the magnet has an integral, substantially C-shaped and open structure" [See figures 1-4 col. 2 line 48 through col. 5 line 4] "with two columns" [See the **Cheng et al., 6,842,002** two rectangular base-feet support columns shown in figures 1, 3, and 4, and col. 5 lines 3-4] which "is integrally manufactured by casting", [See **Cheng et al., 6,842,002** col. 2 line 57 through col. 3 line 18; and col. 4 line 33 through col. 5 line 4.]

38. **Cheng et al., 6,842,002** lacks directly stating that "said yoke is annealed twice." However, **Cheng et al., 6,842,002** does teach that the yoke is formed of a single piece of cast steel, which results in all the yoke units produced by the single casting having the same (i.e. uniform) quality, because they are made from the same mold. Additionally **Cheng et al., 6,842,002** teaches that single casting of the yoke improves the structural integrity of the yoke, and permits the yoke arms to remain parallel, (i.e. the orientation of

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the unitary yoke arm material is able to prevent / withstand the magnetic attraction of the magnet poles, from pulling the yoke arms, component 10 of figures 1 and 4, from being pulled together). [See **Cheng et al.**, **6,842,002** col. 4 line 33 through col. 5 line 24, which directly suggests that the "grain orientation" of the yoke is also consistent and uniform, since opposite on non-uniform magnetic directions attract, and like magnetic forces repel one another]. Therefore, It would have been obvious to one of ordinary skill in the art at the time that the invention was made that since the yoke arms of **Cheng et al.**, **6,842,002** remain parallel to one another, that the magnetic grain of the material forming the yoke of **Cheng et al.**, **6,842,002** and the single cast yoke forming material itself are uniform. Additionally, because a uniform material, with a uniform grain orientation is producible by "annealing a formation material twice" It would have been obvious to one of ordinary skill in the art at the time that the invention was made that the single / integral one-piece permanent magnetic yoke structure of **Cheng et al.**, **6,842,002** includes the feature of "twice annealing" intrinsically.

39. With respect to **New Claim 7**, **Cheng et al.**, **6,842,002** teaches and suggests that "said yoke is formed of low carbon steel material having good magnetic conductivity." [See **Cheng et al.**, **6,842,002** col. 4 line 33 through col. 5 line 24, and col. 2 line 58 through col. 3 line 18.] The same reasons for rejection, obviousness, and motivation to combine, that apply to **New claim 6**, also apply to **new claim 7** and need not be reiterated.

40. With respect to corresponding **New Claims 8** and **9** which respectively depend from **New claims 6** and **7** above, **Cheng et al.**, lacks directly teaching that "said yoke is designed so as to have a streamline-shape appearance". but **Cheng et al.**, does suggest from the curved angles of the figures, and the teachings of page 7 line 9 through page 9 line 13], which design the body of the yoke to be as functional and as efficient as possible while reducing the weight of the magnet as much as possible, a teaching indicative of considerations for "a streamline-shape appearance".

41. Alternatively, **Sellers** shows a permanent magnet assembly similar to **Cheng et al.**, [See **Sellers** figure 4, which is also suggestively streamlined by design. [See

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Sellers figure 4 col. 4 lines 48-56; col. 2 line 57 through col. 4 line 10; and col. 1 line 4 through col. 2 line 68]].

42. Additionally, the ability to modify the “look” of the **Cheng et al.**, reference with a “streamlined appearance” would have been obvious to one of ordinary skill in the art at the time that the invention was made because conventionally, when it comes to selling a product, statistically, devices with “streamlined appearances” are generally more aesthetically pleasing to individuals, since the devices appear to be “highly crafted”, “more modern” or “high tech” which tends to promote a concept of “being on the cutting edge of the technology”, which is highly desirable to individuals or companies who may be paying a significantly large amount of money in order to acquire a new permanent magnet MRI system; (i.e. streamlining a product often increases its value). Similarly “box-like shapes” are conventionally and statistically perceived as less aesthetically pleasing to individuals, because the devices appear to be: “pieced together”, “rough”, “old school technology”, “less modern” and/or “basic / general models”, which may detrimentally suggest that the product itself is less valuable, which is highly undesirable, for anyone buying a new permanent magnet MRI system. Therefore “streamlining” the yoke’s “appearance”, is not a novel, or non-obvious claim limitation, because it is suggested from the cited prior art figures, teachings, and the already established known basic principles of selling a product in the current global economy. Streamlining the appearance of the yoke therefore does not define the applicant’s invention over the applied prior art(s) by itself. The same reasons for rejection, that apply to **New claims 6 and 7**, also apply to **new claims 8, 9** and need not be reiterated.

Prior Art of Record

43. The **prior art made of record** and not relied upon is considered pertinent to applicant’s disclosure.

A) Bryne et al., US patent 6,211,676 B1 issued April 3rd 2001, filed March 11th 1997. [See figure 1, the reference teaches that the configuration may also be formed by permanent magnets.]

B) Siebold et al., US patent 5,729,188 issued March 17th 1998.

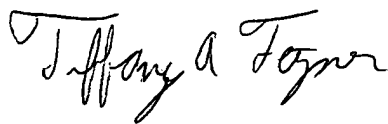
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- C) **Ohashi et al.**, US patent 5,864,275 issued January 26th 1999. [See figures 4a, 4b, 4c].
- D) **Ohashi et al.**, US patent 5,963,117 issued October 5th 1999. [See figures 4a, 4b, 4c].
- E) **Minkoff** US patent 5,623,241 issued April 22nd, 1997. [See figure 1.]
- F) **Huson et al.**, US patent 5,315,276 issued May 24th 1994. [See figures 1, 5].
- G) **Laskaris et al.**, US patent 6,150,819 issued November 21st 2000.
- H) **Laskaris et al.**, US patent 6,259,252 B1 issued July 10th 2001, filed November 24th 1998.
- I) ***Barber** US patent 6,150,818 issued November 21st 2000. [See figures 1 and 7]
- J) ***Damadian et al.**, US patent 6,335,623 B1 issued January 1st 2002, filed November 25th 1998.
- K) ***Damadian et al.**, US patent 6,023,165 issued February 8th 2000, filed December 18th 1992.
- L) **Schultz** US patent 5,818,901 issued October 6th 1998. [See figure 1].

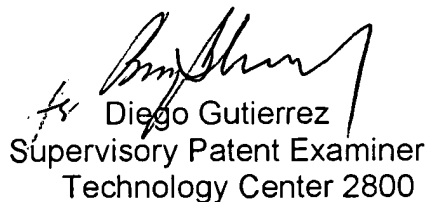
Conclusion

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

45. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.



TAF
August 7, 2005



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800